

（12）特許協力条約に基づいて公開された国際出願

(19) 世界知的所有權機關
國際事務局



(43) 國際公開日
2005年8月11日 (11.08.2005)

PCT

(10) 国際公開番号
WO 2005/074113 A1

(51) 國際特許分類⁷:

H02M 3/28

(21) 国際出願番号:

2004 年 10 月 29 日 (29.10.2004)

(25) 國際出願の言語・

日本語

(26) 国際公開の言語:

日本語

(30) 优先権データ:

特願2004-024563 2004年1月30日(30.01.2004) JP

(71) 出願人(米国を除く全ての指定国について): 株式会社村田製作所(MURATA MANUFACTURING CO., LTD.) [JP/JP]; 〒6178555 京都府長岡京市東神足1丁目10番1号 Kyoto (JP).

(72) 発明者: および

(72) 先着, (75) 発明者/出願人(米国についてのみ): 細谷達也
(HOSOTANI, Tatsuya) [JP/JP]; 〒6178555 京都府長岡
市東神足1丁目10番1号 株式会社村田製作所
内 Kyoto (JP). 竹村博 (TAKEMURA, Hiroshi) [JP/JP];
〒6178555 京都府長岡市東神足1丁目10番1号
株式会社村田製作所内 Kyoto (JP).

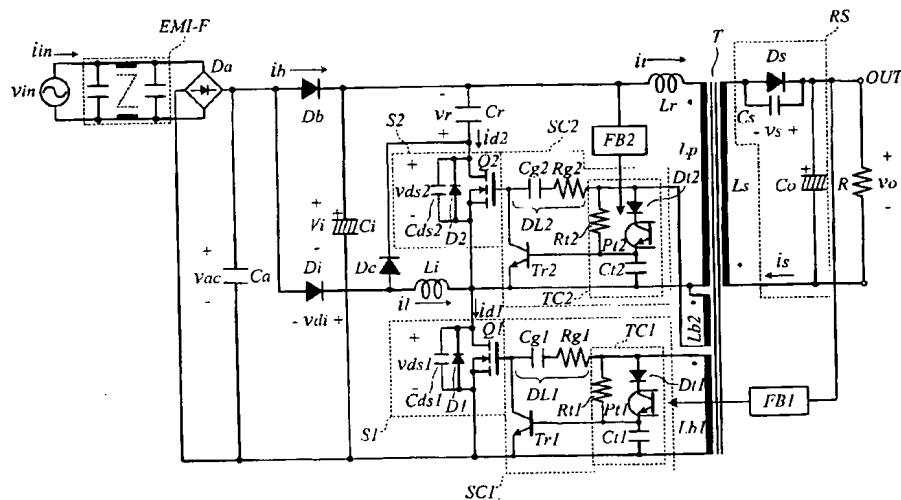
(74) 代理人: 小森久夫 (KOMORI, Hisao); 〒5400011 大阪府大阪市中央区農人橋 1 丁目 4 番 34 号 Osaka (JP).

(81) 指定国(表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,

〔続葉有〕

(54) Title: SWITCHING POWER SUPPLY

(54) 発明の名称: スイッチング電源装置



(57) Abstract: A switching power supply comprising first and second switch circuits (S1, S2) composed of switch elements (Q1, Q2), diodes (D1, D2) and capacitors (Cds1, Cds2), and a transformer (T). A first inductor (Lr) is connected in series with the primary winding (Lp) of the transformer (T). A second inductor (Li) is provided such that the voltage of a third capacitor (Ca) is applied during the on period of the first switch circuit (S1). A diode (Di) for blocking the reverse current of the second inductor (Li), and a capacitor (Ci) charged by the exciting energy stored in the second inductor (Li) to apply a voltage to the primary winding (Lp) during the on period of the first switch circuit (S1) are also provided. Furthermore, a capacitor (Cr) is provided to form a closed loop together with the inductor (Lr), the primary winding (Lp) and the second switching circuit (S2).

(57) 要約: スイッチ素子 (Q 1), (Q 2)、ダイオード (D 1), (D 2)、キャパシタ (Cds 1), (Cds 2) からなる第1・第2のスイッチ回路 (S 1), (S 2) と、トランス (T) を備え、トランス (T) の1次巻線 (Lp) に直列に第1のインダクタ (Lr) を接続し、第1のスイッチ回路 (S 1) のオン期間に第3の

〔統葉有〕

WO 2005/074113 A1

ABSTRACT

A switching power supply apparatus includes first and second switch circuits (S1) and (S2) composed of switch devices (Q1) and (Q2), diodes (D1) and (D2), and capacitors (Cds1) and (Cds2), and a transformer (T). A first inductor (Lr) is connected in series with a primary winding (Lp) of the transformer (T), and a second inductor (Li) is provided so that a voltage of a third capacitor (Ca) is applied during an on-period of the first switch circuit (S1). A diode (Di) preventing a reverse current from flowing in the second inductor (Li), and a capacitor (Ci) that is charged by excitation energy stored in the second inductor (Li) and that applies a voltage to the primary winding (Lp) during the on-period of the first switch circuit (S1) are further provided. A capacitor (Cr) is further provided so as to form a closed loop together with the inductor (Lr), the primary winding (Lp), and the second switch circuit (S2).